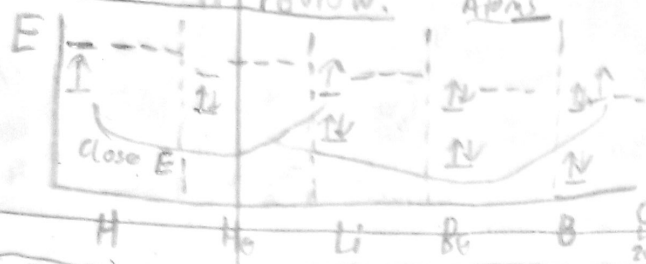
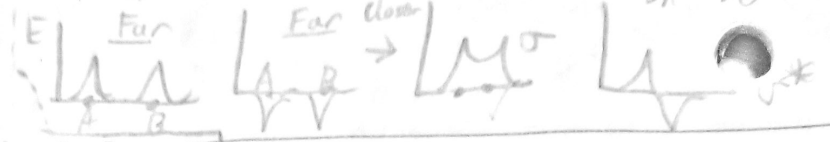
Lecture 11 review: Atoms



Molecules

If ψ_{sA} and ψ_{sB} are eigenfunctions, so are $\psi_{sA}+\psi_{sB}$ and $\psi_{sA}-\psi_{sB}$

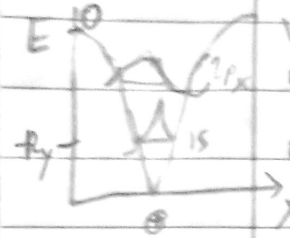


Lecture 12: Bonding; Forbidden Region & quantum interference

Of the 4 quantum #'s, at least 1 must be different.

Atom

- More wiggles → higher E

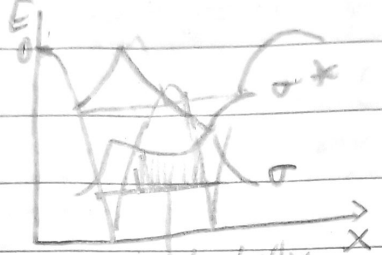


$V(x) \propto -\frac{1}{x}$

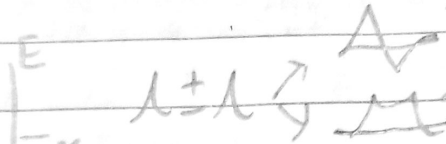
n=2

n=1

Molecule



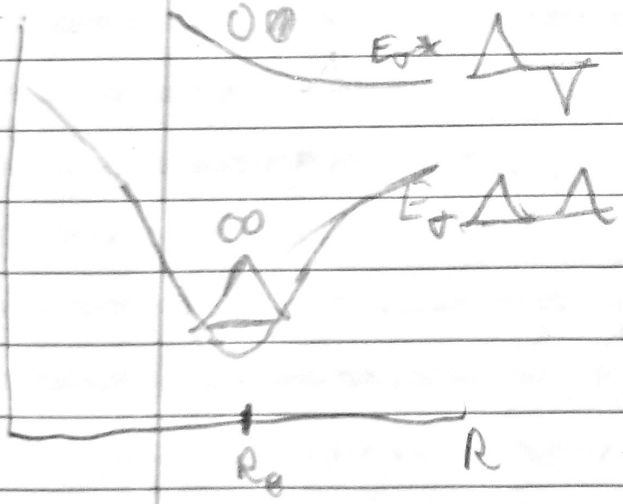
classically forbidden (tunneling)

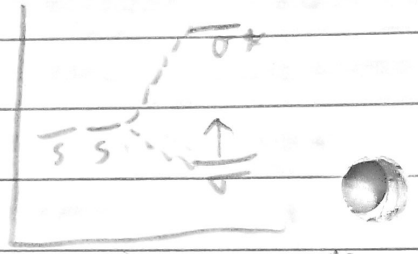


quantum interference "cancelation"

- bonding is additive quantum interference

How does the energy of orbitals depend on nuclear distance R?





If e^- were in σ^*, (higher E wavefunction/orbital) the molecule dissociates.